

**UTILITY
PATENT APPLICATION
TRANSMITTAL**

(Only for new nonprovisional applications under 37 CFR 1.63(b))

Attorney Docket No.
00120/P-4858

Total Pages :

First Named Inventor or Application Identifier

Insu LEE et al.

Express Mail Label No.:

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, D.C. 20231

1. ☒ Fee Transmittal Form
(Submit an original, and a duplicate for fee processing)
2. ☒ Specification [Total Pages -12]
(preferred arrangement set forth below)
- Descriptive title of the Invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
3. ☒ Drawing(s) (35 USC 113) [Total sheets -4]
4. ☒ Oath or Declaration [Total Pages - 3]
- a.1. ☒ Newly executed (original or copy)
- a.2. ☐ Unexecuted
- b. ☐ Copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 17 completed)
[Note Box 5 below]
- i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s)
named in the prior application, see 37 CFR
1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference
(usable if Box 4b is checked)
The entire disclosure of the prior application, from which
a copy of the oath or declaration is supplied under Box
4b, is considered as being part of the disclosure of the
accompanying application and is hereby incorporated by
reference therein.

6. Microfiche Computer Program (Appendix)
7. ☐ Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
- a. ☐ Computer Readable Copy
 - b. ☐ Paper Copy (identical to computer copy)
 - c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. ☒ Assignment Papers (cover sheet & document(s))
9. ☐ 37 CFR 3.73(b) Statement ☐ Power of Attorney
(when there is an assignee)
10. ☐ English Translation Document (if applicable)
11. ☐ Information Disclosure Statement (IDS)/PTO-1449
☐ Copies of IDS Citations
12. ☒ Preliminary Amendment
13. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
14. ☒ Cover Letter with 2 Small Entity Declarations
☐ Statement filed in prior application, Status still proper and desired
15. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
16. ☐ Other

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information:
☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior Application No.

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February 8, 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Insu LEE et al.

Serial No. NEW

Filed February 8, 2000



THE COMMISSIONER IS AUTHORIZED
TO CHARGE ANY DEFICIENCY IN
FEES FOR THIS PAPER TO DEPOSIT
ACCOUNT NO. 23-0975

Attn: APPLICATION BRANCH

Attorney Docket No. 00120/P-4858

HIGHER UNSATURATED FATTY ACID COMPOSITION

PATENT OFFICE FEE TRANSMITTAL FORM

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

Attached hereto is a check in the amount of \$385.00 to cover Patent Office fees relating to filing the following attached papers:

New application \$345.00

Assignment for Recordal \$40.00

A duplicate copy of this paper is being submitted for use in the Accounting Division, Office of Finance.

The Commissioner is authorized to charge any deficiency or to credit any overpayment associated with this communication to Deposit Account No. 23-0975, with the EXCEPTION of deficiencies in fees for multiple dependent claims in new applications.

Respectfully submitted,

Insu LEE et al.

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February 8, 2000

[Check No. 36704]
2000-0016*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of :
Insu LEE et al. : **Attn: APPLICATION BRANCH**
Serial No. NEW : **Docket No. 00120/P-4858**
Filed February 8, 2000 :

HIGHER UNSATURATED FATTY ACID COMPOSITION

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents

Washington, DC 20231

Sir:

Prior to calculating the filing fee, please amend the above-identified application as follows:

IN THE CLAIMS

Claim 3, line 2, delete "or 2".

Kindly add the following new claim:

- 4. A food containing the higher unsaturated fatty acid composition claimed in claim 2. --

REMARKS

The foregoing amendments are effected to eliminate the multiple dependency of the claims to reduce the PTO filing fee.

Favorable action on the merits is solicited.

Respectfully submitted,

Insu LEE et al.

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February 8, 2000

Higher Unsaturated Fatty Acid Composition

BACKGROUND OF THE INVENTION

This invention relates to a higher unsaturated fatty acid composition comprising linoleic acid and α -linolenic acid.

Docosahexaenoic acid (hereinafter "DHA") is a main higher unsaturated fatty acid present in the brains of mammals. It is well-known that DHA plays an important role in visual identification, recognition and learning faculty and memory.

DHA is involved in the synthesis of cholesterol, blood clotting inhibition, aging and cancer prevention. Also, it has been recently found out that DHA is beneficial for the treatment of cardiovascular ailments, arthritis rheumatica and asthma and other lung diseases.

One has to take DHA and other higher unsaturated fatty acids from foods because they are not produced in human body. With a rapid increase in old people population, the number of people suffering from age-related illnesses such as senile dementia is increasing. Such age-related diseases are closely related to the function of brain. Thus a method is desired to strengthen the brain function by replenishing DHA from foods.

Synthesis of DHA is derived from α -linolenic acid through the following five enzyme reaction steps, desaturase, 18 : 4, octadecateranoic acid, elongase, 20 : 4, arachidonic acid, desaturase, 20 : 5, eicosapentanoic acid, elongase, 22 : 5, doscosapentanoic acid, desaturase, 22 : 6, docosahexanoic acid.

Daily amount of DHA required for an adult is considered to be 300-400 mg per day. Since a fatty acid having 18 or more carbon atoms is considered to be formed from linoleic fatty acid (n-6, 18 : 2) and α -linolenic fatty acid (n-3, 18 : 3) both having 18 carbon atoms, for the production of docosahexaenoic acid (DHA), linoleic fatty acid (n-6, 18 : 2) and α -linolenic fatty acid (n-3, 18 : 3) are considered to be essential fatty acids. But there is few method known for taking a required amount of DHA efficiently.

No scientific data exist on the influence of DHA on the function of the brain and eyes. Thus, nothing is known about how DHA can be taken most efficiently.

An object of this invention is to provide a method for making it possible to take DHA efficiently.

SUMMARY OF THE INVENTION

According to this invention, there is provided a higher unsaturated fatty acid composition comprising

linoleic fatty acid (n-6, 18 : 2) and α -linolenic fatty acid (n-3, 18 : 3), the weight ratio of said linoleic fatty acid (n-6, 18 : 2) to said α -linolenic fatty acid (n-3, 18 : 3) being from 0.05 to 7.5.

It was found out that by adjusting the weight ratio of linoleic fatty acid (n-6, 18 : 2) to α -linolenic fatty acid (n-3, 18 : 3) to the above value, DHA is synthesized most efficiently from this composition in the body, particularly in brain, so that this composition strengthens the cognitive and learning faculty and memory.

Other features and objects of the present invention will become apparent from the following description made with reference to the accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

Figs. 1 and 2 are graphs showing the relationship between the dosage of the higher unsaturated fatty acid composition and the cerebral DHA concentration;

Fig. 3 is a graph showing the relationship between the dosage of the higher unsaturated fatty acid composition and the cognitive or learning ability in the Morris maze test; and

Fig. 4 is a graph showing the relationship between

the dosage of the higher unsaturated fatty acid composition and the memory in the Morris maze test.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The higher unsaturated fatty acid composition according to the present invention comprises linoleic fatty acid (n-6, 18 : 2)(hereinafter simply "linoleic acid") and α -linolenic fatty acid (n-3, 18 : 3) (hereinafter α -linolenic acid).

Linoleic acid and α -linolenic acid can be extracted from various vegetable and animal oils, such as flax powder, flaxseed meal, flaxseed oil, other flax oils, and Perilla oil. They may be used separately or mixed together. The linoleic and α -linolenic acids used in the present invention need not be refined ones. An intended higher unsaturated fatty acid composition may be prepared by adding oils containing linoleic and α -linolenic acid to foods containing higher unsaturated fatty acids such as food for livestock so that the contents of linoleic and α -linolenic acid will be predetermined values.

The weight ratio of linoleic acid to α -linolenic acid is preferably 0.05-7.5, more preferably 0.05-2.0. If this ratio is below 0.05, the daily supply of linoleic acid would not reach the required minimum. This would

reduce the amount of DHA in the brain. It will also decrease if the above ratio is over 7.5. It will increase if the above ratio is between 0.05 and 2.0.

The higher unsaturated fatty acid composition according to this invention may be taken alone as a health food, or may be added to or mixed with other foods.

The higher unsaturated fatty acid composition according to this invention increases the amount of DHA in the brain of an animal to which this composition is administered, thus strengthening its cognitive power, learning power and memory. For this purpose, the daily dose of this composition is preferably 9-18 grams per 60 kg body weight (for an adult).

For example, it is necessary to take 1/3 of the daily requirement at each meal (i.e. at least 3 grams per meal for an adult weighing 60 kg), or eight capsules each weighing 0.4 gram at each meal. For this purpose, the composition of the present invention may be added to various foods (broiled or cooked), soy oil as a salad oil, dairy products, capsules, bakeries, cereals, soy milk, etc.

If pregnant women or newborns are given this composition, or if adults take this composition by at least 9-18 grams daily per 60 kg body weight, synthesis of DHA in the brain will become maximum at birth, weaning, or at coming of age. Thus, if the higher unsaturated fatty acid composition is taken continuously

not only during pregnancy but up to five years old, it is possible to beef up the DHA concentration in the young brain. The composition can be taken in the form of practically all kinds of foods including snacks, baked foods, salad dressings, soy oil, dairy products, bread, soymilk, etc. In the case of pregnant women and newborns, if the average daily intake of foods of an adult weighing 60 kg is 1.1 kg, they should take 9-18 grams of the higher unsaturated fatty acid composition. For this purpose, they may take 3 grams of this composition at each meal, or take 8-10 capsules each containing 0.4 gram of this composition, three times a day.

The present composition can thus be used as a cognitive power and memory improver. By adding to foods such a composition, foods can be obtained which can increase the cognitive power and memory.

This higher unsaturated fatty acid composition can be used to improve recognition ability (learning ability) and memory.

If used as a recognition ability (learning ability), memory improver, the composition should be added to foods at the rate of 3 to 5% of the total food weight. For an adult weighing 60 kg, this composition should be preferably given by 3 to 6 grams at each meal, a total of 9 to 18 grams a day.

[Examples]

[Manufacture of higher unsaturated fatty acid compositions]

Flaxseed, repseed and perilla oils were ground, subjected to fatty acid analysis, mixed together to prepare higher unsaturated fatty acid compositions so that the weight ratio of linoleic acid to α -linolenic acid would be 2, 7.5, 10 and 16. These specimens were given to rats by mixing in their feed so that the content of the higher unsaturated fatty acid composition will be 3 to 5% with respect to the feed.

[Examples of the Invention and Comparative Examples]

The abovementioned foods were given to pregnant rats every day from the first day of pregnancy to delivery so that the dose of the composition would be 0.15 gram per kilogram of body weight. Newborn rats were also given these feeds for eight weeks. These young rats were then subjected to cerebral fatty acid analysis and learning power/memory retention ability tests.

The learning power/memory retention ability test were conducted by the following Morris maze test and statistically strengthened.

The results of cerebral fatty acid analysis, that is, changes in the DHA concentration in the brain are shown in Figs. 1 and 2. Among the results of the Morris maze test, the results of cognitive ability (learning ability) tests are shown in Fig. 3 and the results of the

memory power tests are shown in Fig. 4.

Figs. 2, 3A and 4A are results for male young rats, while Figs. 1, 3B and 4B are for female young rats.

In Figs. 1 and 2, the ordinate represents the ratio of DHA to the total fatty acid in the brain of each young rat.

Morris maze test (learning ability and memory retention ability test)

The Morris maze test was used to evaluate both the learning ability and memory retention ability.

In this test, water was poured into a pool 160 cm in diameter and 50 cm deep. The water was clouded beforehand to zero visibility by adding starch. In the water, a footstool was placed at a position spaced 60 cm from the center of the pool in the one-o'clock direction.

Using this pool, the abovementioned eight-week-old male and female rats were subjected to the learning ability/memory retention ability test for 10 weeks.

In the first week, the rats were simply placed in the experiment room to let them accustomed to the experimental atmosphere. From the second week, the rats were divided into several groups, and the rats of each group were subjected to the learning test for four days. After the learning test, the rats were brought back to cages and held there for four weeks. Then, they were brought back into the pool and subjected to the test to

evaluate their memory retention ability. The Morris maze test conditions this time were exactly the same as before.

In the learning ability/memory retention ability tests, the time periods until each rat found the stool in the clouded water and those required to remember where the stool were measured. (Needless to say, the water was so clouded that the rats could not see the stool.) For significant difference judgment in the Morris maze test, student t test, variance analysis (ANOVA), Dunnet's and Scheffe's tests were conducted, each for $p < 0.01$ or $p < 0.05$.

The results are shown in Figs. 3 and 4. Fig. 3 shows the cognitive ability of each of the rats to which were given the feeds of which weight ratio of the linoleic acid to α -linolenic acid were 2.0, 7.5 and 10.0, that is, the time taken for each rat to find the stool in the clouded water, in the Morris maze test. Fig. 4 also shows their memory retention ability. In either case, the shorter the time, the higher the cognitive (learning) or memory retention ability.

Results

1. Cerebral fatty acid analysis

The DHA concentrations in the brain at delivery, and at 21st and 56th days after delivery were the highest for the rats that were given the feeds of which the ratio

of linoleic acid to α -linolenic acid was 2. As the ratio increased from 2, the DHA concentration in the brain decreased.

2. Learning and memory retention abilities

As will be apparent from Figs. 3 and 4, the feed of which the ratio of linoleic acid to α -linolenic acid was 2 achieved the best results. As the ratio increased from 2, the results got worse.

3. Results

Thus, it is apparent that the DHA concentration in the brain is the highest and the cognitive power and memory improve most remarkably when the feed of which the ratio of linoleic acid to α -linolenic acid was 2 was given to both babies and their mothers while they were pregnant.

By taking a composition comprising linoleic acid and α -linolenic acid mixed together in the above-defined ratio, the amount of DHA in the brain will increase apparently, so that it is possible to improve the cognitive ability and memory. Thus the present invention is very important for the food medical industry.

What is claimed is:

1. A higher unsaturated fatty acid composition comprising linoleic fatty acid (n-6, 18 : 2) and α -linolenic fatty acid (n-3, 18 : 3), the weight ratio of said linoleic fatty acid to said α -linolenic fatty acid is 0.05 to 7.5.
2. The composition claimed in claim 1 wherein the weight ratio of said linoleic fatty acid to said α -linolenic fatty acid is 0.05 to 2.0.
3. A food containing the higher unsaturated fatty acid composition claimed in claim 1 or 2.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
0	0	1	4	9	16	25	36	49	64	81	100	121	144	169	196	225	256	289	324	361	400	441	484	529	576	625	676	729	784	841	900	961	1024	1089	1156	1225	1296	1369	1444	1521	1600	1681	1764	1849	1936	2025	2116	2209	2304	2401	2500	2601	2704	2809	2916	3025	3136	3249	3364	3481	3600	3721	3844	3969	4096	4225	4356	4489	4624	4761	4900	5041	5184	5329	5476	5625	5776	5929	6084	6241	6400	6561	6724	6889	7056	7225	7396	7569	7744	7921	8100	8281	8464	8649	8836	9025	9216	9409	9604	9801	10000

[illegible]

FIG. 1

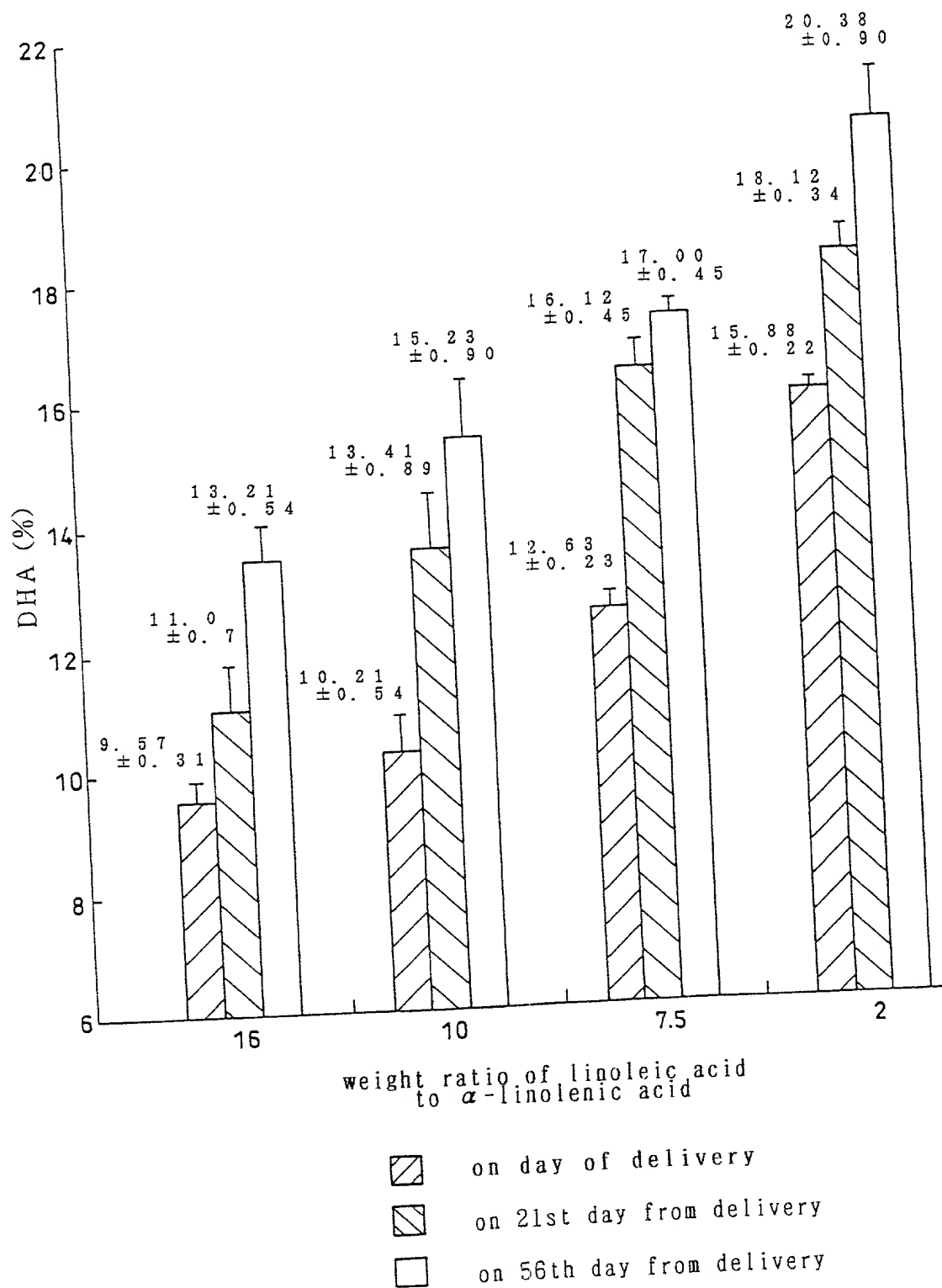
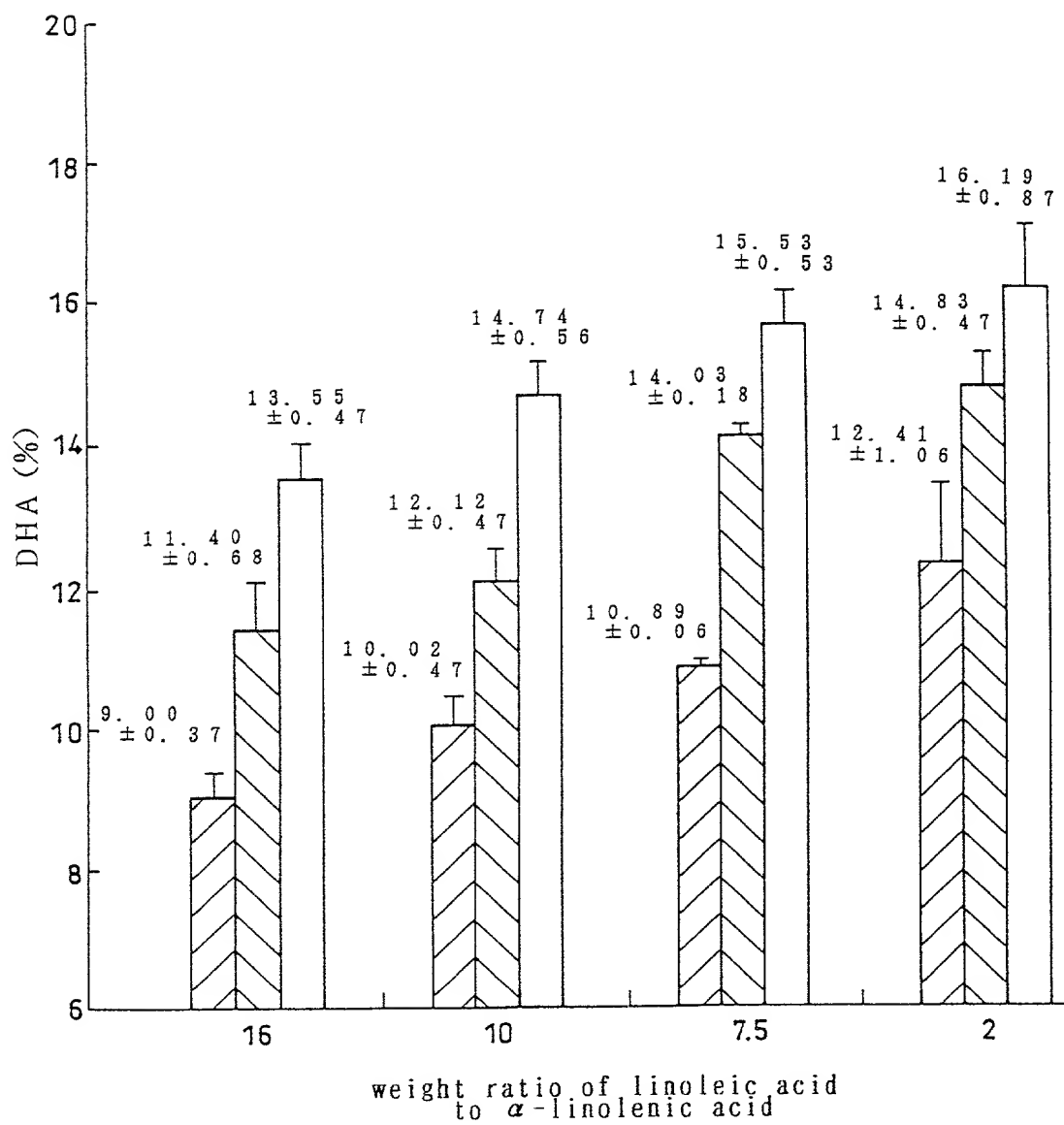


FIG. 2






-  on day of delivery
-  on 21st day from delivery
-  on 56th day from delivery

FIG. 3B

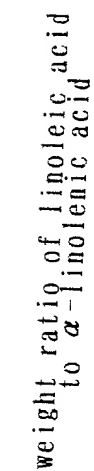


FIG. 4A

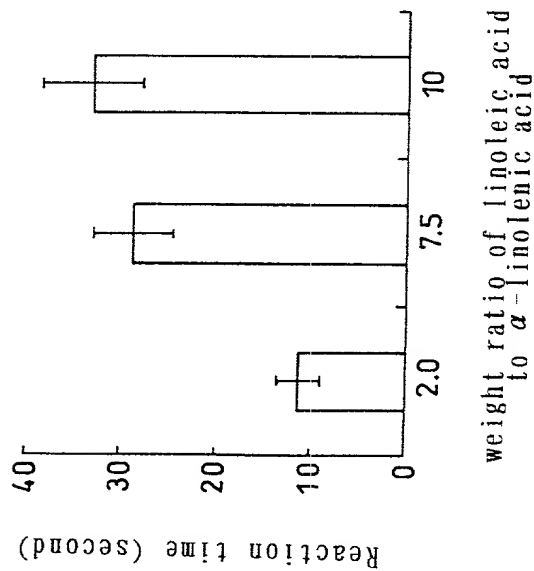
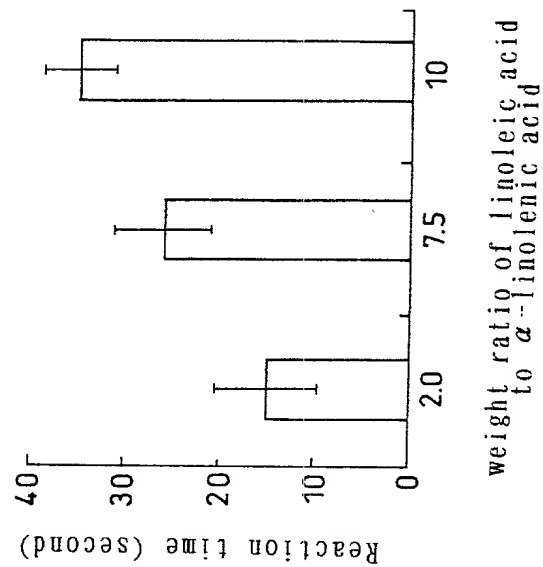


FIG. 4B



DECLARATION AND POWER OF ATTORNEY FOR U.S. PATENT APPLICATION

☒ Original () Supplemental () Substitute () PCT () Design

As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that I verily believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Title: HIGHER UNSATURATED FATTY ACID COMPOSITION

of which is described and claimed in:

- (☒) the attached specification, or
 () the specification in the application Serial No. _____ filed _____;
 and with amendments through _____ (if applicable), or
 () the specification in International Application No. PCT/ _____, filed _____, and as amended
 on _____ (if applicable).

I hereby state that I have reviewed and understand the content of the above-identified specification, including the claims, as amended by any amendment(s) referred to above.

I acknowledge my duty to disclose to the Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim priority benefits under Title 35, United States Code, §119 (and §172 if this application is for a Design) of any application(s) for patent or inventor's certificate listed below and have also identified below any application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

COUNTRY	APPLICATION NO.	DATE OF FILING	PRIORITY CLAIMED
Korea	99-7943	March 10, 1999	yes
Korea	99-21017	June 7, 1999	yes

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

APPLICATION SERIAL NO.	U.S. FILING DATE	STATUS: PATENTED, PENDING, ABANDONED

And I hereby appoint John T. Miller, Reg. No. 21,120; Michael R. Davis, Reg. No. 25,134; Matthew M. Jacob, Reg. No. 25,154; Jeffrey Nolton, Reg. No. 25,408; Warren M. Cheek, Jr., Reg. No. 33,367; Nils E. Pedersen, Reg. No. 33,145 and Charles R. Watts, Reg. No. 33,142, who together constitute the firm of WENDEROTH, LIND & PONACK, L.L.P., attorneys to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected therewith.

I hereby authorize the U.S. attorneys named herein to accept and follow instructions from _____ as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys and myself. In the event of a change in the persons from whom instructions may be taken, the U.S. attorneys named herein will be so notified by me.

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Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE

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Residence & Citizenship	CITY	STATE OR COUNTRY	COUNTRY OF CITIZENSHIP
Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE

1st Inventor	<u>Kejima</u>	Date	<u>Dec. 15, 1999</u>
2nd Inventor	<u>Emilio Li</u>	Date	<u>December 15, 1999</u>
3rd Inventor		Date	
4th Inventor		Date	
5th Inventor		Date	
6th Inventor		Date	
7th Inventor		Date	

U.S. Application Serial No. _____ Filing Date _____
Applicant Reference Number _____ Atty Docket No. _____
Title of Invention _____

DECLARATION SUPPORTING CLAIM FOR SMALL ENTITY STATUS

The undersigned hereby declare(s) that this statement is made to support a claim by the below identified entity for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code, with regard to an invention entitled HIGHER UNSATURATED FATTY ACID COMPOSITION, invented by LEE Insu and KIM Unjoo and described in

☒ the specification filed herewith.
☐ application Serial No. _____, filed _____.
☐ Patent No. _____, issued _____.

☒ a. I am/we are the inventor(s) of the above-identified application.

☐ b. I/we would qualify as (an) independent inventor(s) as defined in 37 C.F.R. 1.9(c) if I/we had made the above-identified application, and rights under contract law with regard to the above-identified invention have been conveyed to and remain with me/us.

☐ c. I am ☐ the owner ☐ an official of the below-identified small business concern; rights under contract law with regard to the above-identified invention have been conveyed to and remain with the below-identified small business concern; and this concern qualifies as a small business concern as defined in 13 C.F.R. 121.3-18, and reproduced in 37 C.F.R. 1.9(d), for purposes of paying reduced fees under sections 41(a) and (b) of Title 35, United States Codes, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons, said number being determined and said affiliates being defined in 13 C.F.R. 121.3-18.

No rights in the invention have been assigned, granted, conveyed or licensed or further assigned, granted, conveyed or licensed, and there is no obligation under contract or law to assign, grant, convey or license, or further assign, grant, convey or license such rights to any person who could not be classified as an independent inventor under 37 C.F.R. 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 C.F.R. 1.9(d) or a nonprofit organization under 37 C.F.R. 1.9(e).

Each person, concern or organization to which any rights in the invention have been assigned, granted, conveyed, or licensed or further assigned, granted, conveyed, or licensed or further assign, grant, convey or license, or as to where there is an obligation under contract or law to assign, grant, convey, or license such rights is listed below:

☒ no such person, concern, or organization
☐ persons, concerns or organizations listed below*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 C.F.R. 1.27)

FULL NAME _____

ADDRESS _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME _____

ADDRESS _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I/we acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. 1.28(b))

I/we further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon, or any patent to which this declaration is directed.

LEE Insu

NAME

SIGNATURE

DATE

NAME

SIGNATURE

DATE

NAME OF SMALL BUSINESS CONCERN

ADDRESS

NAME

SIGNATURE

DATE

TITLE

005000-005000

DECLARATION SUPPORTING CLAIM FOR SMALL ENTITY STATUS

The undersigned hereby declare(s) that this statement is made to support a claim by the below identified entity for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code, with regard to an invention entitled HIGHER UNSATURATED

FATTY ACID COMPOSITION, invented by LEE Insu and KIM Unjoo and described in

- ☒ the specification filed herewith.
☐ application Serial No. _____, filed _____.
☐ Patent No. _____, issued _____.

☐ a. I am/we are the inventor(s) of the above-identified application.

☐ b. I/we would qualify as (an) independent inventor(s) as defined in 37 C.F.R. 1.9(c) if I/we had made the above-identified application, and rights under contract law with regard to the above-identified invention have been conveyed to and remain with me/us.

☒ c. I am ☒ the owner
☐ an official of the below-identified small business concern; rights under contract law with regard to the above-identified invention have been conveyed to and remain with the below-identified small business concern; and this concern qualifies as a small business concern as defined in 13 C.F.R. 121.3-18, and reproduced in 37 C.F.R. 1.9(d), for purposes of paying reduced fees under sections 41(a) and (b) of Title 35, United States Codes, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons, said number being determined and said affiliates being defined in 13 C.F.R. 121.3-18.

No rights in the invention have been assigned, granted, conveyed or licensed or further assigned, granted, conveyed or licensed, and there is no obligation under contract or law to assign, grant, convey or license, or further assign, grant, convey or license such rights to any person who could not be classified as an independent inventor under 37 C.F.R. 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 C.F.R. 1.9(d) or a nonprofit organization under 37 C.F.R. 1.9(e).

Each person, concern or organization to which any rights in the invention have been assigned, granted, conveyed, or licensed or further assigned, granted, conveyed, or licensed or further assign, grant, convey or license, or as to where there is an obligation under contract or law to assign, grant, convey, or license such rights is listed below:

- ☒ no such person, concern, or organization
☐ persons, concerns or organizations listed below*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 C.F.R. 1.27)

FULL NAME _____

ADDRESS _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME _____

ADDRESS _____
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